Industrial FINISHING

Reg. U. S. Pat. Off.

Devoted to Product Finishing in the Factory

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Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor

Coating Wood Slats

We are seeking an economical method of coating wood slats in 12-ft. lengths. It has occurred to us that some of the advertisers in INDUSTRIAL FINISHING might produce equipment of the type we have in mind. At the present time we are doing the work by air-brush spraying method, but we feel that either the squeegee process or the rubber roller process would be more economical and equally as effective.—L.Co. (Drapery Hardware).

Piano Lacquers

In your April 1933 issue, on page 20, reference is made to special piano lacquers. We would appreciate very much the names of companies manufacturing this type of lacquer, as we want to use it for finishing organ consoles.—P.T.Co. (Pipe Organ Supplies).

Spray Molten Brass

We understand that in one of the recent issues of INDUSTRIAL FINISHING, there was an article relating to a gun that would spray molten brass. Will you please advise us who is the manufacturer of this spray gun, as we want to have some of our wood heels coated with brass? Any information you give us on this subject will be appreciated. We would like to have a copy of your publication as we believe it may interest us to receive this regularly.—M.W.J.Co. (Fine Wood Heels).

Burial Case Finish

I have INDUSTRIAL FINISHING for April, 1934, and am much interested in an article, "Concrete Burial Cases," the second installment of which appears in this issue. Will you please send me the copy in which the first installment of this article appeared? We are manufacturers of concrete burial vaults and are always interested in new and better finishes. If you have any other articles discussing this particular finish we would like to hear from you. Likewise if you can direct us to such information it will be appreciated.—X.D.C.Co. (Burial Boxes).

Bronze-Base Finish

There is some company manufacturing a metal spray finish with a bronze base that will stand considerable temperature. Will you please give us the name and address of this company?—I.C.Co. (Burners, Heaters, Hardware).

Polishing, Rubbing, Glazing

I wish to obtain names and addresses of manufacturers of the following, as published in January 1934 INDUSTRIAL FINISHING, "Developments During 1933": No. 626 Rubbing and Polishing Wax (page 14), Glaze Finishes (page 14), P. L. Water Rubbing Compound (page 15).—W. G. C. (Foreman Finisher in Casket Factory).

Tumbling Turnings

We have a finishing problem on a small wooden object about 2-in. high, 1½-in. in diameter, and we figured that a manufacturer of wooden golf tees, finishing them by the tumbling process, would be the logical concern to write to regarding the correct pro-

AND NOW

THE FURNITURE FINISH OF 1934

-- Adds --

#55 FLAT RAPID COTE

A non-pigmented, non-skinning, exceptionally clear Flat Varnish comparable to #45 Clear Rapid Cote in all qualities. Made in three, smooth, satin effect sheens.

#45 CLEAR RAPID COTE

The fast drying, tough, alcohol and waterproof, print resistant, pale, economical finishing varnish that has been widely accepted during the past six months.

#50 RAPID COTE SEALER

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The Rapid Cote Line is the result of a demand for an economical, high quality wood finish. These features can be proved in a production run in your plant. Our practical service men are available to assist you.

GLIDDEN

EVERYWHERE ON EVERYTHING

PAINTS — VARNISHES — LACQUERS — ENAMELS

National Headquarters—Cleveland, Ohio

cedure, and material used. Will you give us the names of a few of these manufacturers? — T. Paint Co. (Paints, Varnishes, Enamels, Lacquers).

Copper Plating

Will you advise us if it is possible to procure a solution ready mixed for copper plating on aluminum? Any information you can give us regarding this solution will be greatly appreciated.—M.Mfg.Co. (Fine Lighting Fixtures).

Polished Brass Lacquer

In the September 1933 issue of INDUSTRIAL FINISHING, page 18, there was described a polished brass lacquer which is alcohol and perspiration proof. Can you furnish us with the name and address of the manufacturer of this lacquer?—J. & Co. (Importers, Exporters & Grinders).

Finish Ebony Handles

We are interested in information on how to properly finish and polish gaboon-ebony handles for sterling silver tea pots. We want to get a high luster without lacquer.—S. K. G. C. Co. (Store Fixtures, Showcases, etc.).

Rubbing Compounds

Can you give us the names of the various manufacturers of machine rubbing compounds or "cutters" for automobile finishing? This is a water cutter that we have reference to, to be applied with buffing machines. We are familiar with three of them, but would like to procure the names of others manufacturing this same product. Any information you can give us will be greatly appreciated.—T. H. & T. Co. (Spray Painting Equipment).

More About Suede Finish How to Remove Glaze

The inquiry regarding "Suede Finish" on page 5 of your issue of April, 1934, is also of interest to us. May we be supplied with a duplicate of your reply?

Do you know of any method which will remove the glaze sizing from finished leather, which will permit uniform recoloring?—S. M. Co. (Laboratories).

Metal Stencils

Could you give us the name of some manufacturer making a small machine for making light metal stencils? —S. V. Co. (Varnishes, Enamels).

New Stanley Chemical Representatives

The Stanley Chemical Co. (Lacquers, Synthetics, Enamels, Japans) East Berlin, Conn., announces that S. L. Dickinson is now engaged in representing them and will devote his entire time to the sale of wood lacquers and other items to the wood finishing trade. Mr. Dickinson has a wide acquaintance throughout the trade as a result of his 25 years' experience in wood finishing and the sale of wood finishing materials.

Also, Edward D. Sechrest of Wellesley Hills, Mass., has joined the organization as Boston representative. Mr. Sechrest is a graduate engineer and has had many years of sales experience.

Spray Equipment Men Elected to Code Authority

At a meeting of the spray painting and finishing equipment manufacturing industry held at the Hotel Cleveland, Cleveland, Ohio, on May 1st, six members were elected to the Code Authority for administering the recently approved spray painting and finishing equipment manufacturing code. The six members are: W. F. Gradolph, The DeVilbiss Co., Toledo, Ohio; H. W. Beach, Eclipse Airbrush Co., Inc., Newark, N.J.; W. B. Thompson, Sprayco, Inc., Sommerville, Mass.; J. F. Roche, Binks Mfg. Co., Chicago, Ill.; J. A. Paasche, Paasche Airbrush Co., Chicago, Ill.; S. Deutsch, The Electric Sprayit Co., South Bend, Ind.

Brewers' Specialties

Beertex products for beer drums, kegs, vats, tanks and other surfaces for the brewing industry (all free from odor and taste) are named and described in an attractive folder released by The Excelsior Varnish Works, Inc., 1228 W. 74th St., Cleveland, Ohio. The principal items include: A plastic sealer for interiors of steel barrels (Beertex No. 10), an interior sealer for tanks and vats (Beertex No. 20), a clear liquid baking sealer for the interiors of steel barrels (Beertex No. 50), syntho brewers' pitch (Beertex No. 60) and brewers' varnish (Beertex No. 80).

ADVERTISING PAGES REMOVED

Latest Furniture

Styles, Designs, Finishes, Colors on exhibition at the World's Fair Market (at the American Furniture Mart) in Chicago this summer

LIVABLE MODERN is the style headliner in furniture to be exhibited at the World's Fair Market at the American Furniture Mart, June 25 to July 14. It's functional modern that isn't too functional. It's classic modern that isn't so classic. It's "borax" without the gingerbread and plus a little styling. It's modern designing toned down with common sense and adapted to the conventional home. And it's what several hundred manufacturers think the public wants!

Modern suites will be found in every case goods line; modern pieces in every upholstered line, modern lamps, modern novelties . . . while the kitchen and the porch are already almost 100% converted to modernism. It will be a modern market.

Mickey Mouse

But for those who like their furniture in the traditional patterns, there will be four aces (Early American, 18th Century English, French and Commercial) and the usual smattering of other styles, such as Biedermeier, Early English, the various provincials (Spanish, French, Swedish, etc.) and Mickey Mouse! The versatile Mickey is now a furniture style all by himself, in the juvenile field.

Experienced observers of the market believe that this season, for the first time, modern will top the other recognized periods in sales volume, its gradual evolution from the bizarre "art moderne" to its present dignified status having opened for it a much larger acceptance from the public in general. But Early American patterns and the standard Georgian designs will provide a close race.

The New Modern

General characteristics of the new modern:

1) It retains the simple construction and restrained decoration, also the use of contrasting woods, that were features last season.

2) It shows Directoire influence, but whether it does or not the salesman will say it does. It's very fashionable.

3) It's modern in the manner of the 1934 Buick, not the Airflow Chrysler. While the motor makers have become more radical, the furniture makers have become less so in style and design.

Editor's Note—This forecast is furnished through the courtesy of American Furniture Mart exhibitors, the material being compiled from advance information furnished by them.

4) In the upholstered pieces, leather is still used at the slightest provocation, and the new fabrics run toward the rougher weaves and stronger colors.

5) Convenience is stressed. Extra drawers bob up in unexpected places; radio sets are built into almost anything, including beds; odd compartments are fitted out with beverage sets; no space is wasted. Cases go right down to the floor—the dustproof feature.

In the matter of accessories, the trend seems to be decidedly Chinese, thus combining the oldest designs in the world with the newest. Many-colored Chinese jars and vases, for example, are widely used in modern rooms that have solid color floor coverings, draperies and upholstery fabrics.

Period Furniture

Developments in the older periods include:

EARLY AMERICAN: Emphasis on the finish, which is as antique as possible. Peg construction widely used. Maple the favorite wood, but birch becoming more prominent.

GEORGIAN: Patterns of graceful design, well proportioned. The finish tends to be lighter, so that the grain of the wood will stand out. Burl and crotch walnut the favorite wood, by a large margin.

PEASANT: California Spanish is the most prominent newcomer here, with French Provincial next. The vogue for semi-rustic furnishings seems to be on the wane.

EARLY ENGLISH: Will be seen in about the same volume as last season; more massive in appearance than ever, if possible.

LOUIS: The rise of modern has decreased the popularity of the French court pieces, with their ornamentation and curves. But Louis suites are still featured in nearly all bedroom lines.

ALL OTHERS: Out of almost 600 manufacturers who maintain displays at the Furniture Mart, at least one can be found who makes any style you might mention. But none of the "miscellaneous" periods attain much in the way of volume.

Kitchen Furnishings

In the kitchen, silver and black seems to be the dominant color combination for the new season, although almost any other color combination is available. "Streamline" designing goes on apace, as manufacturers of other products try to catch up with the stove and refrigerator people, both pioneers in the move to modernize America's kitchens. In ranges, the console type is the style leader.

Designers Identified

Several manufacturers will feature their designers, as well as their designs, at the Mart this summer. While the creators of new patterns that follow traditional lines will continue to labor in more or less obscurity, the modernists will have their names in electric lights, figuratively speaking, at several displays. Such men as Frederick Kiesler (lamps), Walter Dorwin Teague (heaters), Gilbert Rohde and Russell Wright (furniture) are typical of the group.

No let-up is in sight in the flood of post-prohibition items. There will be cocktail tables of every possible type, a free-wheeling beer cart, beverage compartments for occasional tables, buffets and other pieces—and equipment for the tavern and beer garden as well as the home.

Exhibitors catering to the whims

of the younger generation will have a whole series of new patterns, with the trend still toward period furniture for children, rather than the pure nursery designs. Reason: the child can use it longer. For the baby, the newest item is a high chair upholstered in leatherette.

Other Random Observations

1) Card tables are moving up from 27-in. off the floor to 29-in. Reason: more comfort and greater visibility; less chance for your partner to trump your ace because he couldn't see it.

2) More breakfast-room-dining room suites of the three-quarter size, larger than the standard breakfast table but smaller than full dining room size.

3) More bedroom pieces, to enable stores to step up bedroom sales with extras added to the bed-chest-vanity combination. Upholstered pieces definitely styled to go with certain case goods suites are a sample.

4) New screens fold into any shape desired—on the same principle as the old roll-top desk—instead of coming in three or four sections. Pure white promises to be the popular color. Some new models feature a shutter effect. . . for appearance only. The shutters do not open.

5) Cedar chests continue to develop new oddities. In addition to the one that's a full dressing table, we now have a model that produces an extra shelf when the top is lifted—a handy place to store small articles which can subsequently be found without ransacking the entire chest.

Buyers who take notes on all the new things will need voluminous notebooks this summer. Beauty and efficiency have been combined in the fashions for the fall of '34.

Spray Adjustment

LEVERS ARE valuable in many types of devices—even including the spray gun. Consider, as a case in point, a short lever on a spray gun nozzle—a simple lever control which will allow changing to vertical fan, horizontal fan, round or graduated sprays, without adjusting the cap. Such nozzles, it would appear, are applicable to any type and make of spray gun, and may make quite a place for themselves in the finishing world.—H.F.E.

New Spray Equipment

Spray guns, siphon-feed cups, pressure-feed containers, complete portable spray outfits, and hand-operated paint agitators are demonstrated and described in a large two-color circular just released by The Gast Mfg. Corp., Bridgman, Mich. Prices and specifications are included. "Off to a Good Start," is the significant and timely headline in big type beside the picture of a workman with rolled-up sleeves and a spray gun in hand.

Cleaning Metal Surfaces
Before Finishing Them

by C. F. Scribner, M. E.

Careful and thorough cleaning must precede every metal finishing job to insure satisfactory results. Many "mysterious" finishing troubles are due to improper cleaning. What cleaning materials and methods to select will depend upon: 1) the size and character of articles to be cleaned, 2) their surface condition, 3) the volume of work to be handled, 4) the kind of finish to be applied, and 5) various conditions peculiar to the particular factory department wherein the cleaning is to be performed.

▲ ▲ ▲ ▲ ▲ ▲ ▲

ONLY BY obtaining and maintaining cleanliness in the condition of the metal surfaces to be finished, can satisfactory results be expected in the finishing process. Cleanliness is one of the major requirements for success in japanning, enameling, or other metal finishing.

Rust, dust, greases, and grit must be eliminated before good finishing is possible. If rust is allowed to remain on a metal surface it prevents proper adhesion of the finishing material, sometimes discolors the coating material by its chemical action, and usually spreads, resulting later in the finish blistering or flaking off. Oils and greases on the surface produce similar effects. Dust and grit, coming through the thin finishing film, give it a rough surface which is not at all desirable.

These foreign substances can be cleaned off metal surfaces by the use of one or more of several methods. They may be burned off, chemically removed with an acid or an alkali solution, absorbed by gasoline or naphtha, buffed, or removed by sandblasting.

Where the parts are large, and where there are folded seams from which it is difficult to remove objectionable material, the burn-off method is frequently used. This process consists in subjecting the parts to be cleaned to a temperature high enough to burn the undesirable material and somewhat higher than that maintained later in the japan or enamel baking oven. The temperature depends largely upon the metal from which the parts are made and the relative cross-sectional area of different sections of these parts.

On steel parts higher burn-off temperatures may be employed than is practical on non-ferrous products. Where any solder, tin or a lead coating is present, the burn-off method cannot be successfully used. Care must be taken to keep temperatures within limits which will not cause the products to warp or oxidize. Automobile parts are frequently subjected to

a temperature from 600° to 700° F. for three or four minutes, after which they are wiped while hot and then allowed to cool before dipping.

The temperature used in the burn-off process carbonizes the oil and greese on the metal surface. In carbonized form this material falls off in small particles. After removal from the oven, the surfaces of treated parts are either blown off or wiped off to remove any remaining carbonized material or grit.

Old varnish or paint may also be removed by the burn-off process, preparatory to refinishing. A temperature of 650° to 700° F. is required to dislodge the old coating which can then be wiped off with a rag while still hot. The burn-off [oven] process is also a means of drying washed and chemically treated parts. The high temperature used has been found to satisfactorily anneal many metals, thus relieving riveting and die strains from the previous fabrication processes.

Several factors may limit the use of the burn-off process. The cost of the ovens required where there are small quantities produced will not warrant the required expenditure, or a part may have such shape that all its surfaces cannot be wiped off at one time. If all surfaces cannot be wiped, enough waste material may remain on the parts to spoil the finish or damage the finishing materials later applied.

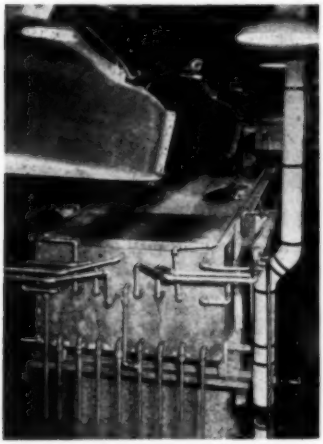
On the market there are a number of chemical compounds for cleaning metal surfaces. These cover a wide range of requirements and a proper selection depends upon the nature of the cleaning problem. Cleaners should be carefully selected after an investigation that begins by first submitting to manufacturers of such materials, all the information relative to what you have to clean —kind of metal, size and shape of parts, the quantity to be cleaned per hour, day or week, and other information relating to the condition and proposed handling and treatment of the parts before and after cleaning. With this information available the cleaner manufacturer is prepared to submit intelligent recommendations relative to what materials to supply for economical and efficient cleaning.

The majority of cleaner manufacturers are large concerns having a tremendous amount of expe-

Hand-dipping a wire basket of small metal parts into cleaning solution. (Photograph, courtesy of Carrier Products Corp.).

rience and specific data on the subject of metal cleaning, and they are particularly interested in having every user of their products absolutely satisfied.

Rust cannot be removed by the burn-off process. Heavy rust



Cleaning automobile fenders on a production basis. The fenders are suspended from a conveyor by means of which they are moved into and out of tanks containing the cleaning solution. (Photograph, courtesy of Carrier Products Corp.).

spots are usually removed by wire-brushing, sandpapering or sandblasting. Thin coatings of rust may be removed either by kerosene or gasoline or by pickling in a solution made of commercial sulphuric acid diluted in water. Other solutions used are: 1) a 20% solution of sodium citrate and water, 2) a 10% solution of ferrous sulphate and water, and 3) a 3½% solution of boric acid and water. These are slower in action than the sulphuric acid bath, which is usually made in the proportions of 1-lb. of acid per gallon of water.

A concentrated solution will not remove rust. Also it is necessary to remove all traces of the acid as quickly as possible after the parts are removed from the pickling bath, by neutralizing them in an alkali bath (either lime or soda) followed by rinsing in both hot and cold water. After rinsing, the parts are dried by hand or in a direct-heated oven.

Acid or soda baths cannot be used safely on aluminum parts or on white metal alloy die castings. Aluminum parts are prepared for a baked finish by a thorough cleaning with gasoline or naphtha, and a subsequent oven-drying. Old paint and varnish may be removed from aluminum with any standard paint or varnish remover.

Where parts being cleaned have no folded seams, inaccessible creases, or sharp corners, it is possible to remove grease and oil by naphtha or carbon tetrachloride dipping. Parts coming from this dipping are dried thoroughly before finishing. Sheet-metal parts and castings require careful treatment.

Especially difficult to remove are the cutting compounds used for cooling tools during metal machining. This applies in lesser degree to the lubricants used in blanking, stamping, drawing and in spinning operations. These lubricants are used to reduce the wear on the tools, hence one of their first requirements is that they adhere closely to the metal. Both animal and vegetable oils are used in these compounds, such oils having a higher film-forming capacity than the usual mineral oils. Special cleaning solutions may be required to eliminate these lubricants before satisfactory finishing can be expected. Suitable solutions for this purpose are available.

To Readers of Industrial Finishing

SOME of your own ideas about what INDUSTRIAL FINISHING'S reading pages should contain, to help you now and in the future, can be expressed at this time.

This journal is designed especially to suit your professional requirements, and the editor wants to know what information you desire, what problems or difficulties you have and how we can assist you. It costs you nothing to make inquiries or to name subjects you wish to see discussed.

Every man occasionally feels prompted to "cut loose" and write some of his own experiences, opinions or ideas. INDUSTRIAL FINISHING solicits letters, criticisms and articles from practical and technical men.

Suggest any subjects you would like to see taken up by articles in the publication; or tell us what subjects you are in position to write about for publication. Address—

INDUSTRIAL FINISHING, 802 Wulsin Bldg., Indianapolis, Ind.

I am particularly interested in articles on

I might write you something on

Name.....

Position.....

Company.....

My Address.....

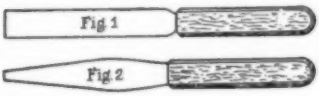
Patching Damaged Finish so skillfully that it defies detection

by Robt. Daniels

BY PATCHING we mean, in the furniture industry (and in other industries that do wood finishing) to repair dents, scratches, bruises, etc. Patching is one of the arts in furniture making which is often misunderstood as to details of procedure. To do effective patching at low cost requires suitable tools and materials in the hands of a careful, skilled workman. I know, as in the last 22 years I have taught many a patcher, both male and female. Women or girls are the better patchers when it comes to small articles, as they are usually neater, quicker and more skillful, but the men can turn out more work on the heavier pieces.

Burning-in Knives

Two of the tools (burning-in knives) I prefer to use are shown in Figs. 1 and 2. These tools have thin steel blades with wood handles and the blades are ground sharp at the ends. Some patchers use only one knife. I use the knife shown in Fig. 2 for very small places—where the other knife would be awkward to use.



Knife Heater

It is customary to heat the knife either with an electric heater, designed and made for the purpose, or a small alcohol lamp. If an open-flame lamp is employed, alcohol should be used as the fuel, as it burns clean and doesn't blacken the knife blade. In emergencies I have made a small oil can serve as a lamp. I simply cut off the spout about 1-in. above the screw cap, punch a small air hole in the top of the can and insert a round wick, letting one end of it protrude from the spout.

Stick Shellac

Stick shellac or burning-in composition is the substance we use to fill in dents, scratches, or bruises. It can be purchased from any wood finishing house or paint store and is obtainable in many colors, and in transparent sticks too. Although some patchers like to use **oak, mahogany,** or walnut colors for the respective woods, I get better results by first coloring the bruise, scratch or dent, with a little spirit stain to match the surface; then I use transparent stick shellac for filling in the depression. After burning in with transparent shellac and rubbing off the surplus and blending it,

Quickly-Cleanly-Safely

Quickly-Cheaply-Safely

The Reliance Varnish Company has developed a new stencil method of obtaining veneer effects on solid wood that is of interest to every furniture manufacturer.

In addition to being realistic, it is most reasonable as to cost.

VENEER-ITE*

(Trade Mark)

STENCIL

VENEER-ITE is an all-stain spray process that prevents any possibility of peeling.

VENEER-ITE represents a cost of as little as 20c to 40c additional in labor and material on a 3-piece suit; perhaps 2c for a table top.

VENEER-ITE can be applied so quickly that it will not slow up production.

Write for full information as to how VENEER-ITE service fits into your manufacturing and merchandising problems.

THE RELIANCE VARNISH COMPANY

917 EAST KENTUCKY STREET LOUISVILLE, KENTUCKY

** Patent applied for.*

the repaired place matches the other surface perfectly. If the patcher uses colored shellac the repaired place can be very easily seen as it is bound to be somewhat off-color. Every patcher has his own pet ways, so my suggestion is to use whatever materials or methods you wish, or whatever is the handiest for you. This work must be done quickly and economically.

Applying Stick Shellac

Hold your burning-in knife in the heater with your right hand, letting just the sharp end touch the heating element; hold it there for about 30 or 60 seconds. Withdraw the knife and touch it against the stick shellac which you have in your left hand. The heated knife will usually draw enough stick shellac to fill the scratch or bruise. The amount to put on the knife to fill the bruise will take practice. Turn the knife over so the stick shellac you have on the knife blade is on the bottom, gently touch and draw the knife at a 45° angle over the bruised or scratched surface of the article; the stick shellac will flow into the imperfection or indentation, filling it as you gently and quickly draw the knife along, and not leaving much on the surface.

If you do not fill the imperfection the first time, repeat the operation until you do, but remember this: handle the knife gently and draw it across the surface quickly so you do not leave much on the surface, as the more you leave on the surface the more you have to take off later. Keep on practicing until you can burn in so that when you rub your finger over the place burned in you cannot feel the amount you left on the surface. In other words there will be no raised place in evidence.

Removing Surplus Shellac

There are several ways to take off the surplus stick shellac which is left on the surface after burning-in. I will give you my own pet way first, as I have found it to be the best and fastest. Have two small sardine cans, one filled with alcohol and one filled with paraffin oil. Cut a sheet of No. 6/0 finishing paper in 8 sections; then fold the finishing paper in three equal sections, dip this paper in alcohol, then in the paraffin oil, and rub with the grain of the wood quickly and firmly over the part burned in three or four times; wipe off quickly with a piece of cheesecloth or rag. If all the surplus stick shellac on the surface does not come off, repeat the operation. If it is all off, take a wad of the finest steel wool and blend the patched place with the rest of the rubbing—and the job is complete.

Some finishers use benzine or gasoline in place of the mixture of alcohol and oil; both are good. Another method for removing surplus stick shellac calls for a felt block about 1½ x 1½ x 4-in., and some FF pumice stone and oil mixed in a small sardine can. Take a little of this pumice mixture on the block and rub with the grain of the wood over the imperfection until almost all of the surplus is off; then take a large rubbing block with the same mixture and rub to blend in with the rest of the rubbing.

Another good method is to shave off the surplus with a safety razor blade, using the blade as a scraper, and then blend in with the rubbing block. For a polished piano finish use the pumice block system and, after wiping, rub with powdered rottenstone, water and block. Wipe well with a chamois; hand polish with the palm of your hand;

oil off and wipe with a cheesecloth slightly dampened with alcohol or vinegar. Then wipe with a flannel cloth or cheesecloth.

The following is the quickest and best method for burning in a scratch: Take a little colored oil, dip your finger in it, rub your finger with the colored oil over the scratch, wipe off with dry cloth, burn in and rub off surplus stick shellac, or apply oil on the scratch and around it, take hot burning-in knife drawing firmly and quickly over the scratch. This will bring it to the exact color; then rub off oil, burn in, rub off the surplus and blend in, rubbing with block.

Green, Fashionable Fall Color

Greens will be the fashion this fall, according to Phillip A. Vogelman, Director of the Color Fashion Bureau of the Onondaga Silk Co. Greens ranging from olive shades to bluish green will form a new note in the fall color picture. This is forecast, according to Mr. Vogelman, by all authentic information now available and also by his analysis of coming trends.

"Fashion trends," said Mr. Vogelman, "are the product of many currents of thought and spheres of influence. One reason for the apparent tendency towards the use of brighter colors for the fall is the definite feeling that social life will be elaborate this winter and that clothes will be more luxurious, consequently there will be a trend away from the uniform black of more dreary years. Possibly the coming vogue for green is in line also with the symbolism of this color, which has always been associated in poetry and literature with the ideas of hope, victory and plenty, and thus reflects the movement towards national recovery.

Among the individual shades of green mentioned by this authority as important for fall are sycamore, a dark bottle-green; Hemlock, a rich blue-green; balsam, with a slightly yellow cast; and willow with still more yellow in its composition.

FINISH WIT-HUMOR
SYMPATHETIC FINISH
SPEAKING OF LIBERTY, IS STATUE?
WHAT IS BIOLOGY?
IT'S THE SCIENCE OF SHOPPING
MY SON JUST GRADUATED FROM COLLEGE, WHAT WOULD YOU ADVICE HIM TO READ? THE "HELP WANTED" COLUMN
A TELEGRAM MORE THAN THIRTY-SIX WORDS IS A YARN.
WHAT IS YOUR NAME? DEWEY, SIR I THOUGHT YOU WAS ALL WET!

« Brewery Finishes »

by William J. Miskella

PAINTS AND other coating materials are available in a great diversified variety for almost every line of industry—and in this connection those for the use of the brewer are no exception to the rule. In fact, it is highly important to have materials of this kind which are really special for the purpose and not manufactured as cure-alls for every sort of finishing trouble.

Unusual finishing materials and methods are used—necessitated by the peculiar requirements of this revived industry—and some of them may be adaptable in other industries. At any rate it's something to think about, regardless of whether you have anything to do with a brewery, or brewery accessories, or brewery products.

A Cold Coating Material

For the coating of wooden, iron and cement tanks and other types of containers inside there is a cold coating material. Its use is confined to those containers which hold cold solutions. The surface to which this material is to be applied must be perfectly clean and thoroughly dry. In fact, a warming operation, performed with a blow torch, is recommended just before the material is brushed on. It is further recommended that if the surface finally obtained with the coating is not smooth enough, another blow torch operation should be performed to smooth the surface.

Before application this material has to be melted at about 350°F. One coat is all that is necessary. It is interesting also to note that in applying it to surfaces which have already been treated with the same material, the old finish does not need to be removed. This interesting coating material is not inflammable nor explosive. Also it is tasteless and odorless. Cleaning in the regular routine should be done with lukewarm water and soft brushes. Disinfectant may be included in the washing water without affecting the gloss.

Cask and Tank Enamel

For the interior surfaces of wooden fermenters, storage tanks, settling tubs, chip casks, starting tubs, ale and porter packages of wood, and such iron items as mash tubs, hop jacks, rice cookers, cooling pans, hot and cold water tanks, malt drums and steeping tanks, there is a special type of cask and tank enamel. It is tasteless, non-explosive and will not turn white. A smooth, glossy coating is produced. It withstands both cold and boiling temperatures. It dries quickly when applied to either wood or iron and is not affected by 4% alcohol and beer. Its solvent

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CORALLAC economy is a welcome note amid universally advancing prices. The remarkable quality of this blend of high viscosity nitrocellulose and gums has been fully proved over a period of years.

Corallac is lower priced than most sealers. And its exceptionally heavy solids content makes it a sensational value at this time. Don't overlook the further economy in reducer. Corallac may be thinned nearly half and half *with alcohol* for spray application.

But economy is not the whole story. Corrallac is a *quality* sealer for use under any finish. Equally suitable under lacquer and varnish of any type, especially the popular new synthetics.

Don't put off trying this high quality, money-saving sealer. Order five gallons prepaid at the barrel price for trial.

JAMES B. DAY & CO.
CHICAGO

is pure grain alcohol and its color is black.

When this material is to be applied to large vats, a syphon may be attached to an air pump to supply pure air for the workers in order to prevent them from being overcome by the alcohol fumes. Because of the black color impurities may be discovered at a glance. In this regard the black color is superior to that of transparent or so-called brewers' varnish.

In applying cask and tank enamel the first coat is "burned" on with a blow torch. This operation is performed immediately after application. When the second coat is applied, it does not require the burning operation. All indications of rust and other impurities must be removed from the surface before applying the first coat. It is well in all cases to have the surface which is to receive this coating warm before beginning work. Usually, two workers are employed—one to do the painting and the other to handle the torch. The torch operation is performed just as soon as the coating has been applied. In other words, the drying is forced by burning out the alcohol solvent and not allowing it to dry by evaporation.

Two coats are required to secure lasting protection and always it is best to "flame off" the first coat, both on metal and wood. Advantage should be taken of the heat of this flaming in quickly applying the second coat before the surface gets cool. After that, the vessels should be allowed to stand before use for about two days.

Refrigerating Pipe Paint

This special material is used for pipes of condensers, brine tanks and ice cans; in fact, it has a use wherever moisture is one of the factors involved. In the cellar, disinfectant may be incorporated with it. Some materials in this classification are of the oil-base type, while others are made with non-drying materials which work by giving to the surface a very thin coating of the protective material —a rather unusual procedure in the application of protective materials to surfaces. However, it is one of the functions of this non-drying type of material that the thinner the coating the better the protection seems to be.

As an example, it is used to some extent by the government in protecting the interior of cannon. A heavy coating is first applied after which a swab is pushed through the bore to create the thin film desired. Both of these types of paints may be used on the walls of the interior of the buildings about a brewery. They are both durable and easy to apply. Of course, the modern way is to apply all materials of this kind with a spray gun, not so much on account of the saving in labor that the manufacturers of spray equipment mention so frequently, but because of the better coverage obtained.

Pitching Machines and Superheaters

It is necessary to have a superheater to take the old coating of pitch out of the cooperage. It is necessary further to see that the old coating materials do not become mixed with the new. The superheating operation also aids in sterilization and in warming up the package so that the new pitch coating may be easily applied and remain in contact with the surface for a long time.

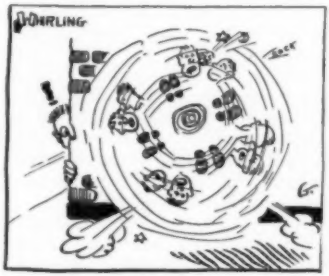
The workman stands at the end of the keg where he may see the bung hole and nozzle of the ma-

chine readily. He rolls the keg in place. After it has superheated, he moves it to the next position where it is automatically sprayed with pitch. The work of these two operations progresses so well that a continuous flow of the reconditioned products comes off the machine. One is always being superheated while another is being sprayed.

Cast Aluminum Finishing

IN THE FINISHING of cast-aluminum street and road signs, the first and most important job is to clean and prepare the surfaces properly. The nature of aluminum is such that something must be done to counteract its "greasy" surface before applying the first coat of finishing material. For this purpose I know of two solutions that have given good results. One is a caustic potash or concentrated lye mixed on the basis of 2-lbs. to the gallon of water; the other is a 25% solution of acetic acid.

The aluminum castings are dipped in a tank of this "conditioning" solution and allowed to hang submerged for 20 to 30 minutes, or until the surface of the metal turns to a grayish black. Then they are dipped first into a tank of cold water to rinse and neutralize the acid, and then into a tank of hot water. Following these dippings, the castings are allowed to dry naturally, after which they are ready for the priming coat.



In two modern plants I have observed two different processes of finishing cast-aluminum signs. Both are giving satisfactory results. In one plant exterior lacquer enamels are used; in the other air-dry and bake-type synthetic enamels are used.

For the lacquer finish a red-oxide lacquer primer is first applied. The signs are then painted in various combinations of color and finished with a final protective coating that consists of one or more coats of exterior, tarnish-proof, clear lacquer.

For aluminum bronze finish, the red oxide primer is omitted; a coat of the bronze mixture takes its place. The vehicle for mixing the bronze should be neutral to the top coat of tarnish-proof, clear lacquer; also it must have the proper adhesion to the metal and it must be adapted to exterior exposure.

With the synthetic bake-enamel finish, the plain castings are first cleaned and then subjected to a baking, the time and temperature being equal to the highest temperature of any of the succeeding finish coats. This procedure is for the purpose of expelling all air from the pores of the metal to avoid possible air blisters in the succeeding coats of finish. No separate coat of primer is required, as the enamel serves both as a priming and finishing coat.

These two finishes have given excellent results, withstanding exterior exposure for long periods of time and showing no signs of peeling or discoloring.—J. E. GREENE.

Finishing Bicycles

by R. J. Fairburn
Zapon-Brevolite Lacquer Co.

THIS ARTICLE describes the finishing methods used by several bicycle and wheel goods manufacturers in the middle west. One of the largest of these concerns uses the following schedule:

Frames

1—Cleaned in soap solution, followed by a hot water rinse.

2—One coat dip in red oxide primer and baked one hour at 350°F. Nibs are sanded or steel-wooled.

3—Frames are then stored until needed in production. The primer is used to 1) prevent rust in storage, 2) fill up any roughness, and 3) give a bond to succeeding finishing coats.

4—Machine operations such as drilling, tapping, etc., are performed. File marks and burrs are sanded off.

5—One coat of synthetic-resin enamel is applied by spraying, and then baked at 180° to 225°F. (depending on color) for 1½ to 3½ hours. Colors used are black, bright red, blue, green, tan and brown. This enamel must be weather resistant and stand up to the hard knocks which an average bicycle is subjected to. Colors must be as permanent and light-fast as it is possible to make them. A high grade black japan is used in place of synthetic-resin enamel for black frames. Metallic finished frames are given one coat of clear, synthetic-resin varnish mixed with bronze powder.

"In line with your letter suggesting subjects for copy, I enclose a description of methods commonly used in finishing bicycles. I hope you will find it interesting. Bicycles are finding one of their greatest present-day markets among society people, and actors and actresses."

6—The same grade of synthetic-resin enamel, in a contrasting color, is sprayed through a special jig on the head and cross bars to form the decoration. This is baked at 180°F. for 1½ hours. It will be noted that the prime coat and body coat must stand this extra baking. The red enamel must also be a non-bleeder, as white is usually used over it for decorating.

7—The frame is then striped by hand. Expert hand stripers are usually employed for this work. Some of the new striping instruments are not so well adapted to use on the rounded frame of a bicycle, and as a result the old-fashioned striping brush is used. Striping is in gold and silver, bronze or in japan colors.

8—It is no longer common practice to use a clear varnish top coat. Before synthetic-resin en-

GENTLE RAIN *drips* **RUIN!**

THE RAIN FALLS, flowers
lants and trees gratefully re-
ourishment it bestows.
gift of nature is not so kind
omobile. Rain attacks wood
seeks to destroy their use-
make a car seem old before

rs, car owners wanted, and
rers sought, a finish that
in its lustrous beauty *and*
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amels were used it was the practice, however, to spray on a long-oil varnish, which was force dried at 150°F. for two hours.

Forks

Forks are usually finished like the frames, although the prime coat is sometimes eliminated.

Mud Guards and Tool Boxes

No primer is used on the mud guards and tool boxes. They are given one coat of the body color of synthetic-resin enamel, and baked. They are striped by hand. Decalcomanias are sometimes used to put insignias on the tool boxes. There is also quite a tendency to chrome plate mud guards instead of using a baked enamel finish. This is particularly true for bicycles having black frames.

One concern uses a monorail system which extends from the spray booths through a gas-heated oven. Another concern—and quite a larger one—has a helper who takes the finished frame from the spray man and hangs it in the oven. This concern operates a dozen spray booths and has them so placed that it is only a few steps from each booth to an oven.

Velocipedes and Scooters

Velocipedes and scooters usually have a more simple finish than a bicycle. One concern making goods for a mail-order house sprays one coat of synthetic-resin enamel and bakes it at about 200°F. for about 1½ hours. These items are not decorated nor striped. Another concern uses the same type of finish but dips the frames and runs them through an oven on a monorail conveyor. Before dipping, any holes (such as those for front fork and seat post) are plugged to prevent paint getting inside the hollow tubing of the frames. Still another concern sprays an oil primer which is baked, and then follows with a spray coat of oil enamel, also baked. This concern decorates with white lacquer enamel. The frames are red and decorated in white and gold.

Dipping

A new type of synthetic-resin enamel, which is now available, makes dipping possible, even for high grade bicycle frames. Heretofore dipping had not been possible because of the sags and drips that formed on the cross bars. This new enamel is highly pigmented, reduces ⅓ to ½ with oleum spirits, and bakes out at 150° to 225°F. for one to three hours. It drains perfectly, even on complicated frames with cross bars running at awkward angles. It is being used in production by some concerns, and others are conducting tests with it. It has a high luster and stands up remarkably well to weathering. While the solid content is higher than is usual for enamels for this type of work, the liquid combination gives it a perfect flow. Actual tests show as much as a 100% increase in covering capacity.

This product is proof of the general feeling among paint men that synthetic resins would make possible materials that would revolutionize finishing methods.

Product finishes have been elevated in rating. They are now planned for color harmony and attractiveness; the materials are formulated or recommended; the schedule and costs are accurately predetermined—all by specialists whose services are offered by reputable finish manufacturers.

NEW
RAVEN SPEED BLACK

ANOTHER triumph from the research department of Berry Brothers—Raven Speed Black—a one-coat synthetic base enamel for dipping or spraying. It dries very fast—dust free in an instant—hard enough to handle in a few minutes. You can eliminate expensive baking ovens and obtain a tough, durable finish.

BOXX UNDERCOATS—Here is a complete system of synthetic base undercoats, including primer, combination primer and surfacer and sanding surfacer. These are high-grade products that speed up production and save you money. They have all the durability of long-oil slow-drying undercoats *and are fast.*

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Let Berry Brothers Research Department assist you in solving unusual finishing problems. We will be glad to help you reduce costs—speed production—produce better work.

BERRY BROTHERS

PAINTS - VARNISHES - ENAMELS - LACQUERS

DETROIT, MICHIGAN WALKERVILLE, ONTARIO

A Martin bomber in flight. (The Glenn L. Martin Co.) The fuselage is olive drab; wings and empennage are lemon yellow, with red, white and blue markings on the empennage.

« Aircraft Finishing—IV »

by M. W. Mason

In this final installment of the series, the author takes up the patching and repair-finishing of damaged points or areas on the fabric surfaces and concludes his article with some valuable notes for the modern aircraft finisher.

✪ ✪ ✪

AIRPLANE SURFACES should be given periodic inspection for wind-worn places, and fabric rips; metal surfaces should be looked over for chipped, cracked or flaking finish.

Patching; Repairing

In repairing metal areas for chips, dents, etc., the section should be washed down with xylol or gasoline and wiped dry while wet. Where the bruise is merely of a surface nature, a touch-up job will be sufficient; that is, the area should be sanded out lightly and the color sprayed on with a small touch-up gun. The color is reduced to such a degree that minimum spray dust is produced. The spray head should be adjusted to a medium size cone spray. Using low air pressure, with the fluid cut down fine, the gun is revolved in a circular direction over the damaged spot. Sufficient material is sprayed on to give complete hiding. After the patch has dried down thoroughly, it is water sanded out and polished.

Where the damage has gone down into the surfacer, it is best to sand down to the metal and build up with primer-surfacer and color in the same manner as doing the original finishing job. Repairing the fabric is not so easy a matter.

Of course, where the damage

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In dipping tanks, baking ovens, spray guns or with brushes, controlled viscosity greatly eliminates sagging, beading, pinholing or brush marks. APCOTHINNER is one Petroleum Thinner that has proven its merit for practically every type of industry from New England through the Middle West. (Research data available for your problem.)

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does not extend into the clear dope the color can be sprayed into the clear dope as mentioned under metal repair. Where the fabric is torn, or the clear dope damaged, the entire panel should be cut out at the edge of the nearest support. A new piece of fabric is then sewed or "doped" onto the surface, overlapping the edges of the hole 1½-in. in all directions.

Sections that are wind-worn from friction of speed, if observed in time, can be saved by applying one or two coats of the clear dope, followed with color. In such cases, the clear dope must always be followed with sufficient color dope to give complete hiding. If this is not done, then the clear will soon break down in sunlight, as discussed before. In repair work, it should be remembered that the average clear dope offers excellent properties as an adhesive, where a sufficient amount is used.

Testing

Many foreman finishers rely chiefly on the reputation and ability of their suppliers to furnish them with uniform standard materials. Costly instruments and skilled operators are required to properly test aircraft finishes. In most cases, it is neither necessary nor economical for the consumer to go into the detail that the manufacturer must in order to insure the quality of the product. However, a few tests such as color, body and workability, coupled with the foreman's experience are sometimes worthwhile running.

Fabric Weight

Measurements conducted on several clear, semi-pigmented and pigmented finishing schedules gave the following results: A pigmented dope system of seven coats weighs 4.7 to 5-oz. per square yard. A semi-pigmented dope system of seven coats weighs 4.5 to 4.7-oz. per square yard. A semi-pigmented dope system of four coats weighs 3 to 3½-oz. per square yard.

Coverage

Clear and pigmented dopes will cover approximately 110-sq.ft. of surface per coat when brushed or sprayed without any reduction. The same material will cover approximately 300-sq.ft. per gallon, one coat, when reduced equal parts with thinner. The stronger colors, of course, will give better yield.

Blushing

The average blush is usually overcome through the addition of retarder in the proportion of ½-pt. of retarder per gallon of thinner. Excessive amounts of retarder are very apt to destroy tautness, therefore it is recommended that you consult your supplier for such specific information.

When spraying 2-tone jobs, where possible, finish off the lighter shade first, following with the darker color.

Certain colors by their nature offer poor coverage. Where this characteristic is encountered, a better policy than applying extra coats would be to use a ground coat for the first coat. For example, a foreman has a red which he knows offers poor coverage. He would select an orange or yellow of known good coverage for his first coat. His second coat would be the desired red. In case he had a poor covering dark blue, he would apply a coat of black, followed by his regular dark blue. In case of dark maroon, he might mix a little black of the

same quality with his maroon for his first coat to increase its coverage. His second coat would be his desired untinted maroon.

Never color off over "green" dope, that is dope that is not thoroughly dry. A quick test of smelling the surface for thinner odor, or water-sanding a small section and observing any pick-up or paper-gumming will usually show up a green dope.

The finishing practices mentioned in this article are in successful operation in many large aircraft plants. However, should any changes be made in your present schedule, your supplier should be consulted first. Only through co-operation of supplier and consumer can satisfactory results be obtained.

Look into Drums

NO TELLING how many different kinds of periscopes there are—of three we know. One is a very important part of the equipment of a naval submarine, enabling the crew to see what is on the surface of the water while they are submerged. Another is a toy which enables small boys to look over walls and similar obstructions. The third allows the industrial mechanic or inspector to look inside tight barrels, metal finishing drums, etc., to determine the condition of the interior. The lacquer-drum periscope has a light attached to light the interior, and it is small enough to pass through a bunghole.—J. E. HYLER.

Industrial Design Service

Donald R. Dohner, formerly Director of Art in the Engineering Dept. of Westinghouse Electric & Mfg. Co., and Alexander J. Kostellow, Professor of Industrial Design, Carnegie Institute of Technology, have established offices at 99 Vandergrift Bldg., Pittsburgh, Pa., where they will carry on an Industrial Design and Research Service.

Mr. Dohner is widely known for his work in Industrial Design and was recently chosen by *Fortune* as one of the ten leading designers of America. He has a fine background in the Arts and a wide range of experience with materials and manufacturing operations.

Mr. Kostellow was educated in Berlin, Paris and New York and is the recipient of national and international honors in the field of Painting. At present, in addition to his work at Carnegie Institute, he is Industrial Design Consultant for several industrial concerns.

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Steel Office Furniture

by Fred A. Schmitz
Factory Superintendent
The Globe-Wernicke Co.

FIRST THE STEEL must be thoroughly cleansed of grease, dirt, oil, finger marks, etc., before applying a prime coat of high grade enamel that will definitely and positively adhere to the steel surface. After baking, a plastic oil-base filler is applied to take care of spotweld marks, scratches, or slight irregularities that may have appeared on the surface of the steel through handling in manufacture. This filler is also baked, and then the entire cabinet is sanded for the finishing coats, which may be of either baking or air-drying enamels, varnishes, or lacquers.

Prime Coats Dipped, Baked

Wherever it is practical, prime coats are dipped and the tanks are of considerable size, containing as much as 5000 gallons of enamel. The equipment is usually of the automatic type, where conveyors carry the material through the enamel, then over a space for dripping, and into ovens from 100 to 150-ft. in length with temperatures of 250 to 400°F. After the proper time has been allowed for cooling, material is removed from the conveyors; intermediate and finishing coats are applied by spraying and baking. The number of coats depends upon the requirements of the various types of finishes, specifications, or customers' orders.

The above procedure is usually followed for so-called standard colors, such as olive green finishes. However, special equipment and methods are required to reproduce imitation wood finishes, such as

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place of LACQUER
1 Lacquer dries rapidly—in minutes, not hours.

Years of research work in our efforts to develop the most satisfactory inside finish for steel paint pails has proven conclusively that nitrocellulose lacquer gives greater satisfaction than any other coating material. * * * We use lacquer as an inside coating not only on pails for paints, varnishes, and enamels, but also on pails to be filled with lacquer. * * * Lacquer is economical and in all other respects is the most desirable finish we know of for the inner surface of our WEDG-SEAL pails."

place of LACQUER

1. Lacquer dries rapidly—in minutes, not hours.
2. Lacquer dries hard—and remains so.
3. Lacquer is print-proof.
4. Lacquer is stable in the drum or can; no seeds; no granules; no "skinning."
5. Lacquer produces a clean surface, free from nibs, grit, and dirt.
6. Lacquer does not water-spot—it is washable.
7. Lacquer cleans more easily—it is alkali as well as acid-proof.
8. Lacquer is stain-proof.
9. Lacquer will not wrinkle—all coats unite into one uniform film.
10. Lacquer "touches-up" perfectly.
11. Lacquers can be "tailor-made" to fit many special uses.
12. Lacquer is longer-lived and retains its beauty.

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BUTANOL *Assures* LACQUER QUALITY

walnut and mahogany. Not many years ago this work was done by hand graining, much like an artist paints a picture. This was not only slow and expensive, but often it gave a poor imitation of real wood. However, with the use of modern equipment and methods, results are uniformly high grade and costs reduced.

"Wood Grain on Steel"

Today most plants use graining plates, which "print" an exact reproduction of wood graining on steel. The plate is made of actual wood boards or a copper plate is developed by a photographing and etching process. When the plates are made from wood, they are usually treated with a potash solution or a weak solution of sulphuric acid to etch the pores to sufficient depth so that sharper impressions can be taken from them. A special graining ink or paste is spread over the board plates and then carefully scraped off so that only the pores and low spots remain filled with ink. An impression is made on a soft composition roller, which in turn is rolled over the steel surface where the impression is transferred to the material being grained.

The copper plate, being made from a photograph, always gives better results. The exact graining and other features in the wood are naturally reproduced in the negative and in turn transferred to the copper plate. As an illustration, a wood panel may have some light and dark sap streaks, knots, burl, or some characteristic figure in the wood that is desirable to have reproduced. With a wood plate, if these characteristics are on the same plane with the rest of the board, there is no way to make a heavier or lighter deposit of ink on these spots, consequently they are not reproduced. However, on the copper plate, the etchings show these characteristics to the minutest detail, being just like the photographic negative.

Men using pneumatic rubbing machines in the Globe-Wernicke finishing department.

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SILK SCREEN METHODS of REPRODUCTION

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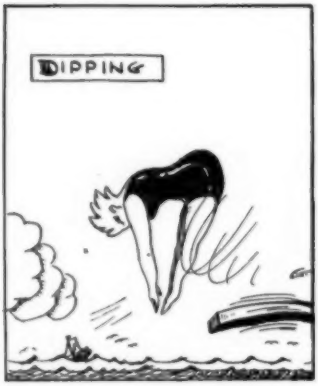
In making an imitation wood finish on steel, a ground coat of suitable color is applied after the object is primed, filled and sanded. The quality and color of material used in this operation is quite important, for it becomes the background for the grain impression and the least variation in shade often causes a pronounced difference in the appearance of the finished panel.

The next operation is very similar to that used in printing. A filler or graining ink is spread over the graining plate, which is then scraped off with a reasonable amount of pressure to remove surplus ink. The graining is transferred to a soft rubber composition roller as the roller is rolled over the plate. The roller is then carefully rolled over the steel object to be grained, leaving the surface with an exact photographic reproduction of the original wood. The grained coat is thoroughly baked before the final finishing coats. These may be either varnish or lacquer, and as many are applied and afterwards rubbed as specifications may require.



As a rule, the highest quality enamels and lacquers are used because the finish must of necessity be exceedingly durable and withstand both hard use and sometimes abuse. It must last for many years. While modern equipment has made the task comparatively easy compared with former methods, nevertheless certain requirements are most exacting and therefore the operations must be performed by skilled and capable workmen. With good, dependable materials, modern equipment, and competent workers, it is possible to obtain very high grade work.

Cleans Off Dust

WHY IS IT so hard to get rid of sander dust on surfaces to be finished, when it has become tightly packed? The reason is that it lies so closely together that it is hard for the blast from an air duster to get under it. That is why some of these compressed air dusters are now fitted with a brush of suitable type, with the air blast directed right through the brush. —A.D.H.

R. C. Mahon Co. Establishes Chicago Office

The R. C. Mahon Co., Detroit, Mich., has established a sales-engineering office in Chicago, Ill., located at 231 So. LaSalle St. This office, headed by Walter F. Sheetz, Vice-President of the Company, will give the Mahon organization direct contact in the mid-west area; it will provide engineering service and closer cooperation for the many industries served by Mahon in that territory.

The R. C. Mahon Co. (spray booths, blow pipe systems, ovens and ventilating equipment) now have a well organized sales representation in all principal cities, with engineering sales-service offices in Detroit and Chicago.

Pumps Out Liquid from Drums

FOR PUMPING and transferring from drums or other containers any of the various liquids and finishing materials used in this industry, the Air-Way pump (Air Way Pump Co., 625 W. Jackson Blvd., Chicago, Ill.) embodies an entirely new method. It pushes instead of pulls. The pump comes equipped with a bung adapter or reducer to fit 2-in. and 1½-in. drum openings, a telescopic extension intake pipe adjustable from 18 to 35-in., and it can be used with or without a hose at the discharge end.

Other features: Liquids do not touch any moving part of the pump while it is in use; liquids strained through a bulb-shaped screen which is self-cleaning; the pump has few moving parts, direct action, and is easy to operate; no priming is required; the liquid flows at once and continues to flow in a steady stream; a gauge at the discharge nozzle rises to indicate full tank; the flow may be stopped either at the pump or nozzle; hose drains back into barrel; pump moves 55 gallons every three minutes; bung adapter tightens on ⅛ turn, making pump adjustable to any position. The complete dispensing outfit includes 10-ft. of metal-lined gasoline hose.

Vin-O-Cel; A New Wood Finish in Clear and Colors

VIN-O-CEL is a tough, durable, rapid-drying finish manufactured in clear and pigmented forms in any sheen or gloss, and embodying all the desired essentials of high grade oil-varnish or lacquer. The clear is designed for use on mahogany, walnut and all other woods commonly used in the manufacture of furniture and fixtures.

Some of its merits, as listed by the manufacturer, are:

Proof to alcohol, water, greases, fruit juices, weaker acids and alkalis; more coverage, build and durability than lacquer; high surface resistance; does not mar white; flows beautifully; sets rapidly; dries dust-free in 15 minutes: may be recoated in four hours; rubs with water and pumice; rubs and polishes after 24 to 48 hours drying; doesn't discolor or become brittle with age. Excellent results may be secured through the application of one heavy coat over stain and filler—especially for rubbed and flat effects.

Vin-O-Cel is a product of the O'Neil Duro Co., 2156 S. 4th St., Milwaukee, Wisc.

What's New « «

Paint Can Shaker

A SMALL MACHINE for violently shaking cans of paint, which have stood a long while, to thoroughly stir up and mix the settled pigment with the thin liquid so as to restore the paint to its original condition and make it suitable for immediate use, is announced by the Miracle Paint Rejuvenator Co., 459 Robert St., St. Paul, Minn. Adjustable can holders accommodate any size can from one-fourth pint to one gallon capacity.

A typical test applied to a can of paint that had stood 15 years, with its pigment not only settled but hardened in the bottom of the can, showed that in this extremely severe case, 16½ minutes of agitation by the machine restored the contents to their original thoroughly mixed condition, ready for use.

Two sizes are offered—a 2-can machine driven by ¼-hp. motor, and a 4-can machine driven by ½-hp. motor.

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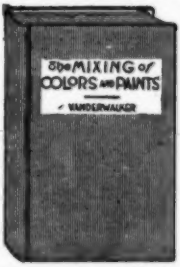

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802 Wulsin Bldg. Indianapolis, Ind.

paint counter, this machine has many other possibilities which will be readily recognized by practical men in the industrial field.

DeVilbiss Spray Gun

DESIGNED expressly for production finishing operations, the new DeVilbiss Type MBC spray gun has been announced by The DeVilbiss Co., Toledo, Ohio. Simplicity of construction insures efficient, trouble-free operation and fine, even finishes.

A sturdy, one-piece air valve utilizes a heavy spring to operate the valve. Foolproof and simple fluid needle adjusting screw assembly

Represents refinement in design and mechanical features

operates with minimum effort. Improved needle packing is taken up by tightening the packing nut with the fingers. This gun has a strong fluid needle spring yet the trigger pull is as light as is practical in such finishing operations. The spray width adjustment valve on back of gun is dialed to permit easy adjustment of the proper setting for each finishing operation. The gun may be used with pressure, suction, or gravity material feed. The air cap includes an increased number of openings, thus permitting extremely fine atomization of lacquers, primers, surfacers, sealers and ground coats.

METAL FINISHES

Over the past several decades M & W has perfected many specialties formulated for specific uses in the metal trade. The aim has always been Quality at reasonable prices.

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Hardware Lacquer
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"Firex" Puts Out Fires; Sounds Alarm

"FIREX" IS actually three anti-fire devices combined into one. First and most important, it is an automatic fire extinguisher. Second, it is an automatic fire alarm and third, it can be used as a hand-operated fire extinguisher if so desired. "Firex" is on the job 24 hours a day—it automatically sounds an alarm in case of fire and automatically extinguishes the fire at the same time.

Carbon tetrachloride, the extinguishing liquid, is sealed in glass containers which are mounted at desirable locations. In case of fire, heat causes fusible link to melt, thereby releasing a spring hammer which instantly swings around, smashes the glass container and at the same time discharges a blank cartridge to sound the alarm. From the broken flask a stream of carbon tetrachloride scatters through the air and down to the floor. It's almost instantly transformed into a heavy gas that envelopes the flames, shuts off their supply of oxygen and smothers them.

"Firex" doesn't have to be directly over the blaze to operate. The fire's heat, in addition to releasing the chemical and sounding an alarm, also creates a natural circulation of heat that draws the gas to it and over it even from a surprising distance.

This new invention is a product of Firex Corp., 512 S. Broadway, St. Louis, Mo.

Portable Rubbing; Polishing

ELECTRICALLY-DRIVEN flexible shafts which drive various kinds of portable power tools—grinders, rotary brushes, disc rubbing wheels and disc polishing wheels—are featured in new circulars released by the Mall Tool Co., 7740 S. Chicago Ave., Chicago, Ill. One particularly handy unit, the "Power Flex," has the motor pivoted in a low 4-caster frame which can be set upright on the floor, laid on its side on a bench or hung from hooks overhead. The entire unit is light enough for a workman to carry it anywhere. The spindle takes wheels for grinding, wire brushing, sanding, buffing and polishing. In the finishing industry this machine is adaptable to several kinds of work including the removal of paint from finished surfaces, and the rubbing and polishing of finished surfaces.

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arises from unfathomable depths . . . . real permanence in color and attraction. It goes well on any product. May we give you details?

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Questions & Answers

Bolts and Nuts

We desire to gather all the information we possibly can on some sort of a mechanical device to coat nuts, bolts and screws in our plant. About 90% of our present production is the coating of ¼ x ½-in. round-head stove bolts and nuts. At the present time, we do this operation by a laborious hand method. We understand there is a barrel tumbling device for this purpose.—T. Mfg. Co. (Metal Articles).

You do not say if the whole bolt is coated, or just the heads. If it is the whole bolt I would suggest tumbling them. If it is only the heads, poke the threaded part through screens, and spray the heads. The nuts can also be tumbled, or coated on screens.

To tumble satisfactorily the surface must be cleaned of all grease or other foreign matter. The quantity to put into the tumbling barrel depends upon the size of the barrel. It is not well to pack the barrel too full. The paint manufacturer is about the best man to see in regard to this. The articles are tumbled for a fixed period, possibly 15 to 30 minutes. This also depends upon the make of enamel; a few tests will give you this—or ask the firm that supplies your finishing material.

After the articles are tumbled they can be scattered out on screens, and baked. Do not let enameled pieces touch each other while baking, as they will stick together. They may seem dry to the touch when coming out of the barrel, but when they get hot, they soften up again until they are thoroughly baked.

If you wish to give them two coats after they are baked the first time, put them back in the barrel and repeat the process. Add your color little by little, as the barrel rotates. Do not let the bolts or nuts bunch up on the (drying) screens, as they will stick together. Some of the pieces may show a speck of plain (uncovered) iron after the first tumbling process. This cannot be helped, but these can be laid aside and tumbled again after baking.

A good tumbling japan will come out of the barrel dry enough to handle, and after it is baked it will be a very tough finish. There are several firms who manufacture tumbling barrels—or a makeshift of your own can be built in an emergency.

Two sticks can be fastened lengthwise in the barrel on opposite sides; when the articles being tumbled hit these they are thrown, which prevents the pieces from sticking together. The big thing to keep in mind, when tumbling enamel, is to always use quality material. The best is always the cheapest.—Fred. Mannhardt.

Warped Panels

We are having some trouble when we spray lacquer on panels. When applying the first coat we find that they warp. If you or any of the readers have any information which they can give us as to what material can be used, if possible, when applied on the other side to make the panel flat

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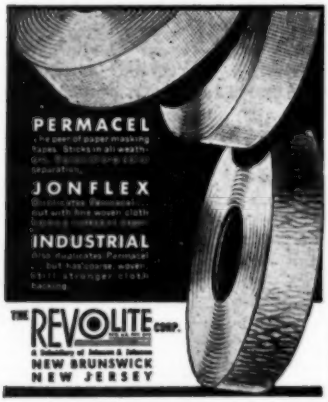

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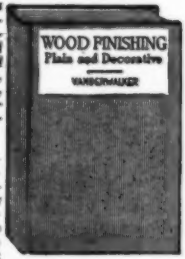
A Book of Formulas and Detailed Instruction in Methods, Tools and Materials. Period Finishes. Staining, Filling, Varnish, Painting, Enameling, Glazing, Lacquers.



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again, any information that you can furnish us will be greatly appreciated.—H.E.D.Co.

It is questionable whether you can flatten these warped panels successfully. If they are bowed out on the unfinished side, then the unfinished side has absorbed moisture from the air and swelled. Careful drying with the heat concentrated chiefly on the bowed side should reduce this swelling and thereby help bring the panel back to somewhere near its original flat shape. If the finished side is bowed out (which is unlikely) then the opposite course should be followed, that is moisture should be added to the concave side. If and when you succeed in flattening these panels, be sure to apply a coat of sealer finish or paint or glue size to the unfinished side to equalize the absorbative qualities of both sides.

When you want panels to really stay flat, you should get well made panels that are five ply in thickness—perfectly balanced in construction—and to keep them so balanced you should apply finish coatings of approximately the same kind and thickness on both sides. On the backs, which do not show, you can use a cheap coating (possibly one made from reclaimed material) but whatever you use should have approximately the same degree of sealing and moisture-proofing as the face finish, so that in service each side of every panel will absorb and release air and moisture at about the same rate and in about the same amount. Then the panels are more likely to remain flat—if they were flat when they were finished—unless some conditions of inequality in stress prevails while they are stored or in service, for example more heat or moisture

on one side than on the other. It's unequal stress that bends or warps your panels.—I.F.

To Protect Metal Edges

We are having some difficulty in a run of stampings which we have recently shipped one of our customers. This stamping is of chrome-plated steel—strip stock. After blanking, the edges are left unprotected with chrome and as this article is subject to the weather the upper edge gets rusty and causes a very unsightly appearance.

We have tried dipping in clear lacquer, but this does not suit our customer, as the company complains about the lacquer showing up any small scratches that may be in the material.

Could you suggest some way to remedy this condition, by using some other solution that will not injure the chrome finish now on the material?—U.T.E. Stamping Co. (Sheet Metal Products).

Four suggestions I have in mind are as follows:

1) Instead of using chrome-plated steel, use stainless steel which is the same composition clear through. Then the edges, regardless of where and how they are cut, will not rust—nor will any scratches or marred places on the face of the parts ever rust. This may increase your material cost, but it would probably lower your production cost, inasmuch as the edges of the stampings will not need to be treated separately, nor will the parts need to be plated all over individually after stamping.

2) Use unplated strip stock and plate the articles individually after they have been formed and blanked.

Rotary Striper

Rolls out perfect stripes — quickly and easily, greatly reducing costs of decorative striping. Even inexperienced help can use it. Every commodity manufacturer needs one. Try the "Lightning."

MOTOR INDUSTRIES CO.
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Ideal for striping and decorating furniture, toys, metal products, auto bodies!

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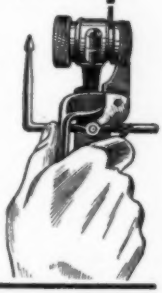

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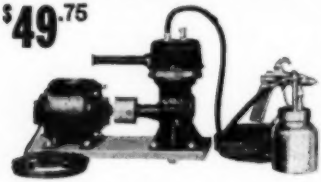

A low-priced outfit for the small manufacturer. You'll be amazed at the efficiency of Spra-more "33"! ¼ H. P. motor—direct drive—diaphragm compressor — air cleaner — pressure adjuster — motor switch. Equipped with Crown 14 gun. Weight, 42 lbs. Send for full details.

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CESCO RESPIRATOR

Take this opportunity to get this new CESCO RESPIRATOR. Finest protection obtainable for nose, mouth, throat and lungs from inhaling sprays, dusts and fumes. Finishing shop not complete without it. COMFORTABLE—does not irritate or interfere with speech or breathing. Soft rubber mask fits face closely. Wear all day with ease. No. 80 has wool felt filters, No. 81 removable chemical cartridge. Write for folder or order from your jobber or direct from us. Satisfaction guaranteed.

CHICAGO EYE SHIELD CO.

2311 Warren Blvd. Chicago, Ill.

3) Coat only the blanked edges of your plated stampings with aluminum paint—or with a clear rustproofing material.

4) Coat the surfaces of your present plated stampings as you are now doing, but instead of lacquer, use a clear rustproofing material such as is now offered by several companies.—J.N.C.

What's Salt Air?

Some time ago I noticed a finish manufacturer's ad wherein they speak of "salt air." We have had arguments as to whether there is such a thing as salt air. Will you please get this information from the advertiser or any other source, and oblige?—H.F.P.

The term "salt air" is perhaps a misnomer. Anybody who has had an automobile parked overnight at the seashore, however, will be conscious of the wet sticky deposit which accumulates on the windshield, and which is undoubtedly a deposition of salt water mist that has been thrown into the air from the beating of the surf on the shore. It is this deposit that is responsible for the severe corrosion conditions which take place on the seashore exposure of metals. The term "salt air" has undoubtedly grown up as a reflection in the popular mind of the effects of seashore exposure.

In the laboratory, the best parallel to this type of exposure is given by deliberately subjecting coated metal panels to the effects of a mechanically developed mist of salt water, and the seashore exposure results are in many cases quite closely paralleled by the results which are obtained in the laboratory with such a procedure.

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SAND BLASTS

For removing old paint from Automobile Bodies; Removing scale from Iron and Steel.
Sand Carving Wood the new process
We also build PAINT SPRAY GUNS, Pressure Tanks, Air Compressors, etc.

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Positively guaranteed against overheating . . . even if current is left on continuously . . . and will not burn out under these conditions.

Current consumption less than 5c per day if used continuously all day. Try one 30 days at our expense. At end of that time either return heater or send order to purchase at $6.50. Specify voltage desired, 110, 120, 220 or 240 volts.

OP-AL Electric & Mfg. Co.,
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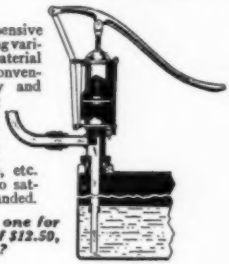
No more drum tilting
. . . . Use the Air-Way Pump



HERE'S an inexpensive unit for withdrawing various quantities of material from drums—it's convenient, safe, speedy and prevents dripping loses. Used extensively for dispensing varnish, stains, shellac, linseed oil, alcohol, turpentine, etc. Fully guaranteed to satisfy or money refunded.

Will you try one for the low price of $12.50, f.o.b. Chicago?

AIR-WAY PUMP CO.
625 W. Jackson Blvd., Chicago

CUT STRIPING COSTS WITH
MOORE FOUNTAIN STRIPERS
THE GENERAL INDUSTRIES CO.
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$8.50
Eight Guides Two Wheels

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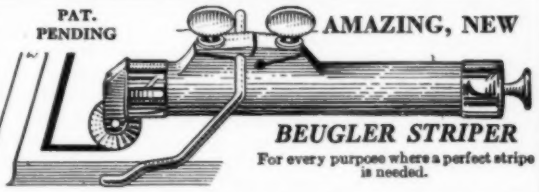

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Industrial FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment

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EDITORIAL

Keep "Industrial Finishing" Copies for Future Reference

Inquiries for further information about materials and equipment featured or mentioned in back issues of INDUSTRIAL FINISHING (sometimes two or three years back) frequently come to this office. It is evident that many readers wisely keep their back copies available for future reference. Changing conditions account for the fact that what does not interest a man or firm at one time may be of vital importance to him a few months later. A tremendous amount of information on a variety of subjects pertaining to every phase of industrial finishing appears in the issues of INDUSTRIAL FINISHING, and it's a great convenience to have these back copies on hand to refer to when the need comes.

What's Getting Attention Now

Among the scores of inquiries that come to this office, asking for further information about items published in recent issues of INDUSTRIAL FINISHING, those rating the largest number since May issue appeared, are "The Water Booth," (April issue, pages 11, 12, 13) and the "bleaching material for dark woods" (May issue, pages 49 and 50). Others refer to "Synthetic Enamels . . . ," "Aircraft Finishing," "Non-Shrink Crack Filler," "Mechanical Stripers," "Non-Bleeding Red Stain," "Finishes for Burial Cases," etc.

Confidence, Intelligence, Ability Demanded of Salesmen

Certain factors that strongly influence inquiries, sales and purchases are often unknown or underestimated by manufacturers who sell, and manufacturers who buy finishing equipment and materials. An illustration of this point is cited in the experience of an eastern sales representative. He says:

"In November, 1928, I received a request from a tannery to quote on spraying equipment for use in finishing high-quality leather for sale to the industry catering to the higher type user.

"My original recommendations, after the necessary survey, met with approval, as the status at this late date proves. But on being asked for advice regarding the

kind of finishing materials best suited, my only intelligent or unbiased advice was limited to something on this order:

"'The manufacturer of finishing materials is undoubtedly more competent to serve in this respect than the equipment salesman. Any material manufacturer of financial responsibility and background of experience would or should be conservative through its representative in giving advice, as it would to some extent entail an obligation if the recommendation covered a specific operation.'

"Pressed somewhat further along the same line, I cited the fact that having some familiarity with the tanning industry I might suggest that it would be well for them to consider carefully whether or not the lacquers which they contemplated spraying would be immune to tannic acid—either in the form of liquid from hemlock bark used in tanning the best types of leather, or synthetic acid which might be used to hasten the process of tanning.

"In any event, according to their letter, the contemplated installation was abandoned. But they are now ready to go ahead and have asked me to call and write up their order for equipment such as was originally quoted as being best adapted for their purposes.

"Their letter was addressed to me personally, but included the name of the company I then represented. Naturally I felt that as I was then under salary, the only honorable position I could take was to explain that I was now operating independently and that the business they offered was primarily that of the company named and they would be taken care of by the jobber representative covering the territory—although if they wished I would be glad to quote them on their present needs.

"Their reply was to the effect that while they appreciated my stand, they felt there was no obligation and would prefer to place the business with me.

"Here was a case where a salesman, not familiar with the tanning industry and perhaps handling products that had not been proved satisfactory in the industry, might have done considerable harm all the way around—to himself, to his company and to the type of products he was offering or recommending.

"I do not believe there is any room for intelligent argument against the fact that new types of material and equipment are set back for years—and this is taking into account business conditions—by ignorance and cupidity in the selling field."

A New Stain-Filler

One of our friends—an experienced practical man well versed in wood cabinet production, including wood-finishing operations—writes us about "A Revolutionary Development in Wood Filler," which he assures us "is now being used in the inventor's own cabinet factory where it has been under tests for the past two years," and which will probably soon be placed on the market through the established channels of a finishing materials manufacturer.

Quoting our informant briefly:

"This new filler is a true water stain combined with other agents which give a good filling, besides permanency of color.

"1) It has the same beauty, as to clearness, as water aniline stain; the coloring matter is water aniline stain and fast to light.

"2) It can be applied by brush or

spray and wipes very easily, and has wonderful filling qualities.

"3) It sets up in 10 to 15 minutes, but can be retarded to meet any occasion.

"4) It does not raise the wood grain; in fact it has sealing qualities.

"5) It dries rather fast, in fact within two hours, under ordinary conditions. Sealer, varnish or lacquer may be applied directly over this filler without danger of any bleeding.

"This is a straight water-stain combination filler; in fact water is used to secure the correct consistency required of fillers for different woods."

Lacquer Sales

Total lacquer sales for the first quarter of 1934 were 60% greater in both value and volume than for the first quarter of 1933, and 33% greater than the first quarter of 1932, according to a Department of Commerce report released May 28, 1934. These figures are based on data reported to the Bureau of Census, Washington, by 102 identical manufacturers, and include sales on finish lacquer, lacquer thinners and dopes—to industrial users, jobbers and dealers. The total gallonage sold during the first quarter of 1934 was 6,216,891.

Last year the number of gallons sold during the second quarter was 50% greater than for the first quarter of 1933; and for the third quarter, 68% greater than for the first quarter. In the fourth quarter of 1933, the number of gallons sold was 12% greater than for the first quarter.

Lacquering Pictures

THE LACQUERING of a plain or tinted photograph or halftone print with a transparent finishing material gives the print a long-life protective film and added luster—or a dull mat finish if this is preferred. Success in such work depends upon several factors. For example, the ink tinting colors or whatever makes the print or picture should be alcohol-proof because most lacquers used for this work are spirit soluble.

Assuming that you have a quantity of stock run off and thoroughly dry, the method of coating this with colorless lacquer will depend upon your equipment for such work.

Probably the most satisfactory coating is the sprayed coat, using a very fine jet—yet there are two objections to this. First, it requires great care and patience and, second, if this coat is sprayed on one side only, the paper will have a tendency to curl up, and must be kept under a weight.

The dipping process will obviate the tendency to curl, but requires much more careful handling, as the dipped prints must then be suspended on an endless line

where they touch nothing while dripping. Furthermore, dipping is the most wasteful method of coating.

Machine coating (by rollers) is possible only if the prints are fastened to the conveyor belt immediately upon leaving the machine—so they will not have an opportunity to curl up before drying.

These print lacquers are furnished in both a glossy type and a flat or dull type, the latter being used to give the same impression as a mat surface on a regular photograph. The glossy lacquer, when dry, may be burnished with hot rolls, thus giving the surface a high luster—whether the picture be a halftone made with printer's ink or a regular gelatin photographic print.—R. L. WINANS. (The Kepec Co.)

Refinishing Metal Surfaces

IN THIS WORK the procedure must be governed largely by what finish was used originally and what condition the finish or surface is in at the time it is to be refinished. The safest and surest procedure, to save future headaches, is to remove the old finish and start fresh from the clean bare metal. Of course, there are exceptions. One can safely finish over an old coating—in the case of air-drying enamels, bake enamels or lacquer enamels—if the surface is free from breaks, has no deep scratches, and still has good adhesion to the metal, and if it is still a tough film.

To begin on such a surface (that is working over the old finish), first give it a thorough and uniform sanding with a fine grade of paper that leaves no sanding marks. Clean the surface thoroughly with gasoline if it is an oil-enamel finish; use a lacquer cleaner if it is a lacquer finish. Then proceed by applying a thin coat of surfacer if necessary to get the proper build. Apply a second thin coat. After this is thoroughly dry, sand lightly with fine sandpaper. You will then have a good foundation for your finishing coats of enamel.

After sufficient drying time, following the final enamel coat, the finished surface may be rubbed and polished, using fine powdered pumice and oil or water, or rottenstone and oil or water. After it has been cleaned, the surface can be brought to any degree of sheen or gloss by using any of the reliable grades of polishing compounds.—J. E. GREENE.

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